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415 of food stored in irregular-shaped vessels like gourds of different sizes. It is not impossible that any educational authority which 251 gave time to the invention of separate storing vessels, roughly speaking of the same size, might gradually improve the process of seed-selection in this area, and also the power of the housewife to calculate the amount of food she has stored.

343 The problem of estimating the amount of millet available at any period of the year is another difficulty. From the outside the 251 Bemba grain bin is simply an opaque lath and plaster cylinder, through which the height of the grain cannot be measured. Crawling through the entrance at the top, the housewife descends on to the flat surface of the millet. Its level can be roughly measured by the circular withes (*amabango*) described on p. 85, and the woman will say of her millet at the beginning of the season that it is 'up to the second or third withe'. But these bands are very irregularly placed, varying from 15 inches to 2 feet apart, and the builders seem to make no effort to measure the distances more equally. Very few natives seem to count the number of baskets of millet they put into the granary at harvest time, although the men, at any rate, are prepared to have a shot at the figure when asked. It did not usually tally with the rough estimate I made by measuring the circumference and height of the pile of grain. One man guessed 10 baskets, i.e. 500 lbs., whereas the weighed contents proved to be 350 lbs.

●804 The problem, then, is whether the householder knows how much grain he has in his granary, say as compared with what he had last year, and whether his wife is able to calculate how long her food will last and to apportion it accordingly. The answer can only be reached by observing her methods of taking grain from the bin. The woman describes the process of taking out millet from the granary (*ukubansa*) as a very difficult task. 'Only old women know how to look after the food' (*ukutentembe filyo*—to care for or to plan out supplies).[1] To take out the grain, the housewife does not fill her basket from the top, as we might have expected, but scoops out the millet round each side until a column of grain is left standing in the middle of the granary. This may be a half cone leaning against one wall (*cinsenene*), or the pile formed by cutting off segments of the circle each side (*yombe*), or

[1] Cf. The slow process of education of the girl described in Chap. VIII.

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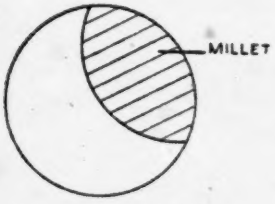
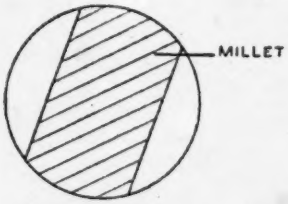
a central column (*mushinge*). Having reached the floor, the housewife stands on the cleared space and very slowly scrapes down the millet heads into her basket a few handfuls at a time, taking care not to shake the main pile of grain. It is very important not to trample on or disturb it in any way.

At first it seemed impossible to get from the women any explanation of why this procedure was considered so necessary. I imagined the clearing of a space round the walls kept the grain



Kubansa cinsenene.



Kubansa nombe.

Kubanse mushinge.

from the damp, and that the method allowed air to reach the whole of the column. This is probably so, but I never got this answer from the women themselves, who only replied again and again, 'It is our way of making the food last', or 'A woman who takes grain from her bin carelessly (*cibansebanse*) will find she has none left in the rainy season'. They would not, or could not, explain more clearly. The facts seemed to them to be obvious to the meanest intelligence and to need no elaboration. At last some of the men, more able to understand the European's constant preoccupation with the measurement of quantities, whether of size or weight, provided the solution. It appeared that, besides avoiding trampling and disturbing the grain, the native method enables the housewife to calculate the amount of her supplies. It gives her, in fact, a column of grain she can see instead of one she cannot, and through a slow process of learning, season after season, the elder women gradually acquire the power of estimating how long a pile of grain will last, and how often it is safe to brew beer. She never expresses her calculation numerically in terms of the number of baskets of grain available in relation to the number of mouths she has to feed, but she will say, for instance, 'This food will last till the pumpkins are ripe', and she is usually right! There is no doubt, however, that a type of granary which allowed for more exact reckoning of its contents, either by means of more careful

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inside marking, or widespread education in counting the number of baskets put in and taken out, would make foresight more possible, and probably act indirectly as an incentive to increased production.

To conclude, the Bemba system of storage[1] allows them to keep their staple crop for a period of about a year, but is hardly efficient enough to make it possible to accumulate for longer periods. Their type of granary, combined with their system of calculation, prevents them from estimating with European precision the size of their crop. They know methods of preserving most of their accessory foodstuffs, however tasteless the results of the process. But in actual fact only very insignificant quantities of legumes and other vegetables are stored, and the people are still largely dependent on the bush for relishes, except in the months immediately after harvest.

The Bemba Kitchen

Bemba methods of cookery depend on their type of fire-place and their cooking vessels. All heating is done over an open wood fire burning slowly on the floor of the hut with no chimney to draw up the smoke. The cooking vessels are placed directly over the fire supported on three conical clay stands (*amaphwasa*) about 1 foot high and 9 inches in diameter cemented on to the floor.

Bemba cooking vessels consist of open earthenware pots of various sizes and shapes which the enamel saucepans of the Europeans are only gradually beginning to oust. The largest pot used for making *ubwali* is known as an *inongo*. It is a big round vessel with an open mouth about 2 feet in diameter, but narrowing in slightly to form a neck. Each housewife reckons to have two or three *inongo* for cooking, but they are too heavy to carry to the river for water. For this purpose she uses a smaller pot with a narrower neck known as a *umutondo*. She may also cook stews in such a pot or in the little bowls about 9 inches in diameter known

[1] Other methods of storage are found among a number of the Central African tribes, e.g. the Ila build granaries on the walls of their huts with clay grain receptacles on the platforms (Smith and Dale, op. cit., vol. i, p. 121). Some of the Luba tribes in the Congo also build grain stores inside the hut, but keep maize and legumes outside on platforms on trees in grass containers (P. Colle, *Les Baluba*, 1913, p. 133). The Akele also store food in bundles tied to high platforms built in the centre of the village and thus protect the food from rats and mice (*Les Bushongo*, Torday and Joyce, 1925, p. 91).

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802 a gap between it and the first two fingers stands for three, and the two pairs of fingers with a gap in between for four, while the closed fist represents five. The other numbers are indicated on the right hand, while figures above ten are represented by giving the ten sign with two closed fists and then starting to indicate the units again.

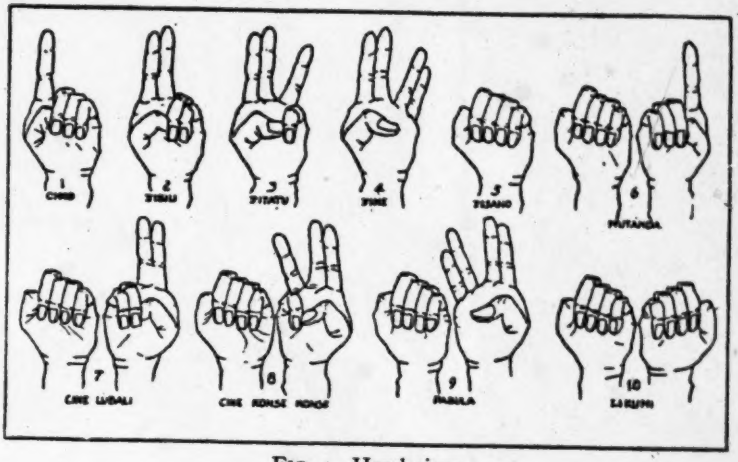

FIG. 4. Hand-signs.

The method of representing high numbers is thus exceedingly clumsy and any Bemba who have come in contact with Europeans have quickly adopted our system of counting.

In point of fact high numbers are not needed in ordinary Bemba life since the objects to be counted rarely exceed 20 in number, in distinction from the cattle-owning Bantu who reckon herds by the hundred and thousand. In fact the Bemba seem quite uninterested in big numbers as such. Their folk-tales, unlike those of a [538] number of primitive peoples, do not dwell on the hundreds of cattle, horses, wives, spears, &c., that the hero possesses, but merely on the difference between 'many' and 'big' and 'very many' or 'very big' expressed with great emphasis of the voice and a rising tone.

● 804 There are no definite units of length, weight, or capacity in this community. Though the Bemba are perfectly capable of measuring length accurately in such operations as house-building or furniture-making in which it is necessary to do so, they work by comparing the sizes of different objects such as two poles with a

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strip of bark-fibre, and not by the use of mathematical units. They do not attempt to measure the length of garden, merely distinguishing between a big garden and a small one. Their estimation of walking distances is notoriously misleading, since here subjective factors intervene, and they not only give the answers calculated to cheer or depress the European with them, but also themselves count a difficult journey, or one usually undertaken by loaded men, as actually longer than an easy one.

No attempt is made to measure weight, although the Bemba have a shrewd sense of the carrying power of the different members of their family. They estimate capacity by means of the different receptacles commonly used in the household. These vary in accuracy. The carrying-baskets (*umuseke*, plur. *imiseke*) containing about 50lb. of grain, probably vary from 10 to 15lb., while the eating-baskets (*icipe*, plur. *ifipe*) containing about 6lb. are probably more uniform in size. Granaries differ markedly in capacity, and the measurement of the contents of these grain bins has been shown to be exceedingly difficult, both because of the opacity of the walls and the unequal lengths between the binding withes.[1]

Nevertheless these difficulties of estimating weight and capacity could probably be overcome if there was sufficient need to do so. In fact, however, the owner of a granary usually considers it quite unnecessary to assess its contents. The people do not count the number of baskets which they put into the *ubutala*, and in a village where I asked each man how many baskets he had reaped, the estimates given me varied from one extreme to another, and were completely inaccurate in the only cases where they were tested. I only met one native who had attempted to measure the contents of his grain bin. He was an exceedingly intelligent, enterprising man who had worked on a farm in Southern Rhodesia, owned a motor-bicycle and the first plough seen in the area, and was, besides, a very good tailor. He had started to reckon the number of baskets put in an unusually large granary with a tally of beans on the ground, but even he gave up the attempt after the slightest

[1] Cf. Chap. V. The type of foodstuff here makes a difference, e.g. among the Yakoë of Cross River, S. Nigeria, a man stacks his yams tied to poles in vertical rows and is able to assess his wealth quickly in terms of the number of his yam-sticks. Daryll Ford, 'Land and Labour in a Cross River Village, S. Nigeria', *The Geographical Journal*, vol. xc, no. 1, July 1937, p. 34.

Among the S. Bantu a man counts his cattle and thereby assesses his wealth, and in Melanesia he counts his heaps of yam and taro.

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804 discouragement, i.e. when some fowls began to eat the beans. Repeated questioning failed to produce a gardener who was prepared to estimate the size of his garden or of the crop, though many would say 'I shall want a big granary for that millet' or 'It will fill half a granary'. But a comparison in any one year of size of crop to size of granary and to number of eaters, I never heard made.

It must be realized too that the incentive to measure food-supplies depends largely on whether it is intended that they should be exchanged, or used as a means of assessing wealth, status, or some other attribute valued in the particular society. For instance in some parts of both West and East Africa marketing, either by direct barter or with the use of a money currency, is highly developed; and here, as we should expect, the weights and quantities of different foodstuffs are most accurately measured. Again, in parts of Melanesia, where kudos is associated with the reciprocal exchange of valuables and baskets of food, the computation of these objects is naturally made with a great deal of emotional intensity. The same can be said of the Indians of North-Western America, who reckon status by the credit a man obtains by offering or destroying in public quantities of blankets and copper plates in the elaborate system Potlache exchange. Among the Bemba, however, there is no such reason why the exact size of a man's harvest should be ascertained, and no fixed values even in money by which a man's income can be assessed.

Magic and Food Calculations.

789 Apart from this lack of desire to measure their assets it is important to notice that the Bemba, probably as a reflection of the general uncertainty of their budgeting system, are definitely convinced that identical quantities of food do not always last the same length of time or satisfy the same number of eaters. On the contrary they believe that its power both to last till the end of the season, and to satisfy the hunger of the eater, depend upon special magic properties which can be given to it by human beings, if they perform the necessary rites. Even quite educated natives support this view. How is it, they say, that one woman fills her granary at harvest and finds that it is empty long before the year is done, while another reaps the same amount but the food lasts in her *ubutala* until the

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i-fyalo). This is a term applied to the whole of the Bemba territory, but also used to describe the district under the rule of a particular chief. The Paramount and the territorial chiefs under him, such as Mwamba, Nkula, Nkolemfumu, Mpepo, Cikwanda, &c., each rule over a tract of country with more or less definite boundaries, which has its own name dating back to the very early days of the Bemba occupation.[1] Each of these districts is known as the *icalo* of such-and-such a chief. Some are sub-divided into smaller districts under the rule of a sub-chief. Thus the *icalo* may be defined as a political division, and its inhabitants have a certain economic unity since they all pay tribute to the one chief and expect to receive help, supernatural or material, from him.

Mpanga, the word used for 'bush', is also sometimes applied in a more restricted sense to mean the area immediately surrounding a headman's village, that is to say the few miles between one small stream and the next. The *bakabilo* or hereditary councillors of the Paramount, claim to be owners of their *mpanga* by right of descent from the first holders of their titles, who were appointed to the district by the first Citimukulu. Therefore they may not move their village beyond the distance between one river and the next. They claim supernatural powers over the area, and in some cases may prevent the chief from being carried through it.[2] But in the case of an ordinary headman the term *mpanga yandi* hardly means more than 'the neighbourhood of my village'.

Mpanga may also mean the strip of bush between one open marshy place and the next. This country is so well watered that a traveller along an inter-village path passes one tiny stream after another at intervals of four to five miles, and the Bemba make a rough calculation of distance by this means. 'We shall pass three *mpanga* and camp at a village in the fourth', they say, and the term gives some idea of the probable length of the journey.[3]

Cultivated land is divided into (*a*) *mputa*, or village mounds, a circular band about 300 yards across round the village, (*b*) *ifitemene* (sing. *icitemene*), the millet gardens which are cut in the bush each year, at first near the village and then farther and farther out until

[1] e.g. Ituna is the *icalo* of Mwamba, Icinga that of Nkula, &c.

[2] The Cimba, Munuca, Citikafula, Katenda, Cikutwe, all have this right since the sacred relics they possess are so powerful that they might harm the Paramount himself.

[3] C. Doke records the same method of measuring the journey's length among the Lamba, *The Lambas*, 1931, p. 18.